Refutation of axiom pinpointing

Abstract: We evaluate the first example of ontology where the antecedent description of a graph implies three possible consequents as equivalences. The conjecture is *not* tautologous in two sets of variables, hence refuting the method of axiom pinpointing, to form a *non* tautologous fragment of the universal logic VŁ4.

We assume the method and apparatus of Meth8/VŁ4 with Tautology as the designated proof value, **F** as contradiction, N as truthity (non-contingency), and C as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

LET ~ Not, ¬ ; + Or, ∨, ∪, ⊔ ; - Not Or; & And, ∧, ∩, ⊓ , · , ⊗ ; \ Not And;
> Imply, greater than, →, ⇒ , ↦, ≻, ⊃, ↠ ; < Not Imply, less than, ∈, ≺, ⊂, ⊬, ⊭, ↞, ≲ ;
= Equivalent, ≡, :=, ⇔, ↔, ≜, ≈, ≃ ; @ Not Equivalent, ≠, ⊕;
% possibility, for one or some, ∃, ∃!, ◊, M; # necessity, for every or all, ∀, □, L;
(z=z) T as tautology, ⊤, ordinal 3; (z@z) **F** as contradiction, Ø, Null, ⊥ , zero;
(%z>#z) N as non-contingency, Δ, ordinal 1; (%z<#z) C as contingency, ∇, ordinal 2;
~(y < x) (x ≤ y), (x ⊆ y), (x ⊑ y); (A=B) (A~B).
Note for clarity, we usually distribute quantifiers onto each designated variable.

From: Peñaloza, R. (2020). Axiom Pinpointing. arxiv.org/pdf/2003.08298.pdf

Abstract. Axiom pinpointing refers to the task of finding the specific axioms in an ontology which are responsible for a consequence to follow. ...

2 Axiom Pinpointing (2.1.1)

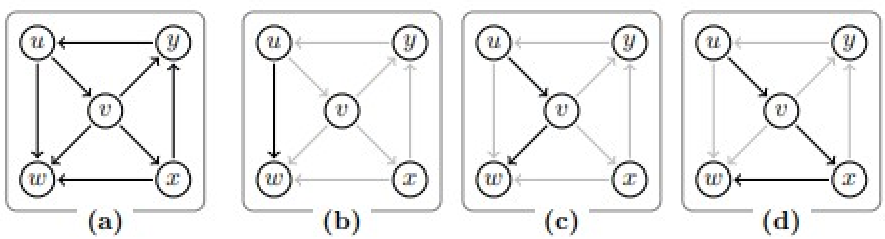

Fig. 1. The ontology $\mathcal{G}$ depicted as a graph **(a)**, and three justifications for the consequence (u, w) **(b)–(d)**.

Remark 2.1.1: We render Fig.1 as excluding the y edge because it is irrelevant to and simplifies the instant conjecture.

LET p, q, r, s: u, v, w, x.

((u>v)>((x>w)+w))>((u>w)=((u>(v>w))=((u>v)>(x>w)))) ;

TTTT TTTT TTTT TTTT(2)}8
FFFF FFFF FFFF FFFF(2)}
TTTT TTTT TTTT TTTT(4)}
TTTT TTTT TTTT TTTT(8)} (2.1.2)

((p>q)>((s>r)+r))>((p>r)=((p>(q>r))=((p>q)>(s>r)))) ;

T**F**TT TTTT T**F**TT TTTT (2.1.3)